



**G14 LENNOX PULSE™. SERIES
UP-FLO GAS FURNACES**
40,000 to 100,000 Btuh Input
Add-On Cooling 1-1/2 thru 5 Nominal Tons



**Lennox Pulse Combustion Design
Provides Heating Efficiency Up to 96.2%**

The Lennox G14 series pulse combustion up-flo gas furnaces provide efficiencies (AFUE) of up to 96.2%. Eight models (natural gas or LPG) are available with input capacities of 40,000, 60,000, 80,000 and 100,000 Btuh. The units operate on the pulse combustion principle and do not require a pilot burner, main burners, conventional flue or chimney. Compact, standard size cabinet design, with side or bottom return air entry, permits installation in a basement, utility room or closet. Lennox add-on evaporator coils, electronic air cleaners and power humidifiers can easily be added to the furnace for Total Comfort all season installations. Additionally, replacement of most Lennox furnaces manufactured by Lennox in the last 20 years can be accomplished with only minor modifications to ductwork or add-on cooling coils.

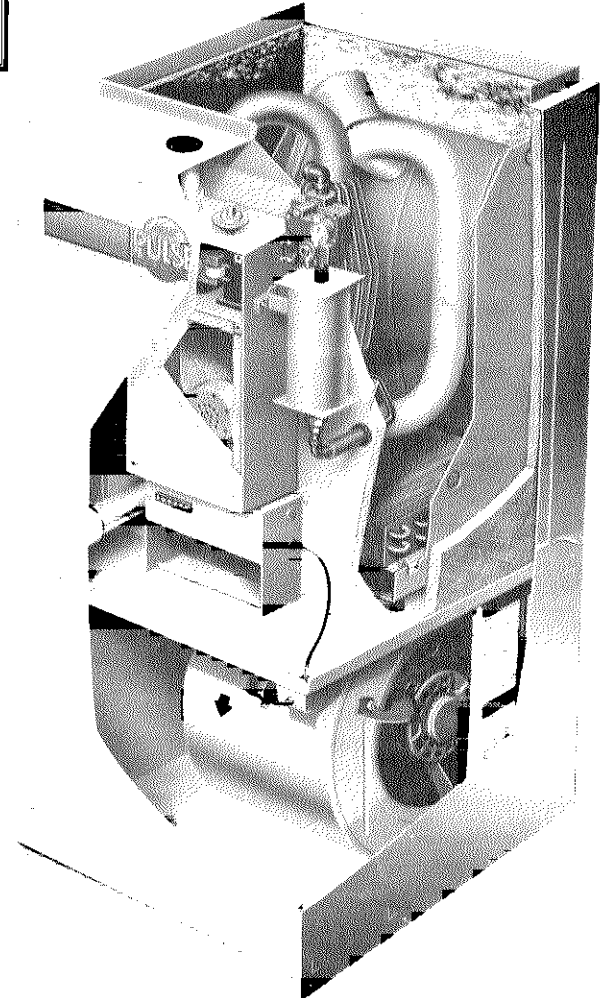
The high efficiency of the G14 line of furnaces is achieved through a unique heat exchanger design which features a finned cast iron combustion chamber, temperature resistant steel tailpipe, aluminized steel exhaust decoupler section and a finned stainless steel tube condenser coil similar to an air conditioner coil. Moisture, in the products of combustion, is condensed in the coil thus wringing almost every usable Btu out of the gas. Since most of the combustion heat is utilized in the heat transfer from the coil, flue vent temperatures are as low as 100°F to 130°F allowing the use of PVC (polyvinyl chloride) pipe for venting. The furnace can be vented through a side wall, roof or to the top of an existing chimney with up to 35 ft. of PVC pipe and four 90 degree elbows. Condensate created in the coil may be disposed of in an indoor drain. The condensate (PH ranges from 4.0 to 6) is not harmful to standard household plumbing and can be drained into city sewers and septic tanks without damage.

The G14 furnace has no pilot light or burners. An automotive type spark plug is used for ignition on the initial cycle only, saving gas and electrical energy. Due to the pulse combustion principle the use of atmospheric gas burners is eliminated with the combustion process confined to the heat exchanger combustion chamber. The sealed combustion system virtually eliminates the loss of conditioned air due to combustion and stack dilution. Combustion air is piped to the furnace with same type PVC pipe as used for exhaust gases.

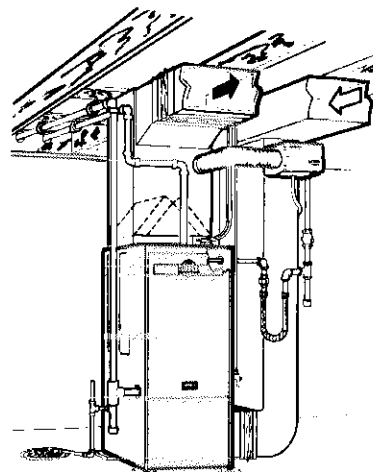
The furnace is equipped with a standard type redundant gas valve in series with a gas expansion tank, gas intake flapper valve and air intake flapper valve. Also factory installed are a purge blower, spark plug igniter and flame sensor with solid-state control circuit board.

Furnished with the G14 furnace as standard equipment are a fan and limit control, 30 VA transformer, blower cooling relay, flexible gas line connector, (4) isolation mounting pads, base insulation pad, condensate drip leg and cleanable air filter. Flue vent/air intake line roof or wall termination installation kits, LPG conversion kits, external filter mounting rack, and thermostat are available as accessories and must be ordered extra.

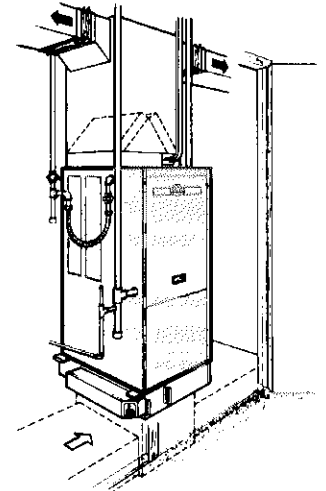
G14 units are shipped completely factory assembled with all controls installed and wired. In addition, the units are fire tested at the factory and require no field adjustments on start up.



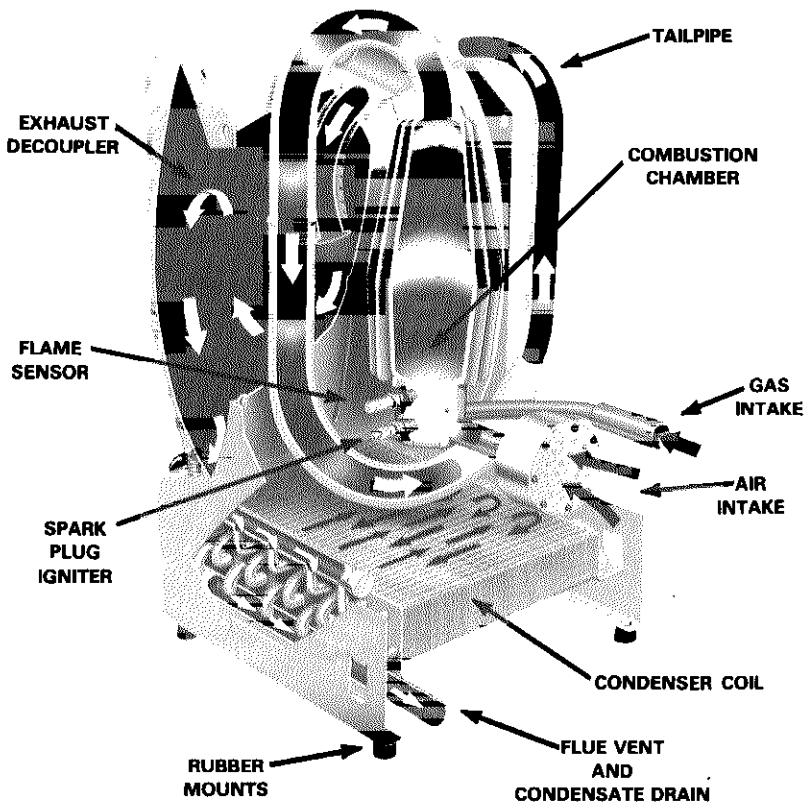
Typical Applications



**Basement Installation
with Cooling Coil
and Automatic Humidifier**



**Closet Installation
with Cooling Coil
and Electronic Air Cleaner**



PROCESS OF COMBUSTION

The process of pulse combustion begins as gas and air are introduced into the sealed combustion chamber with the spark plug igniter. Spark from the plug ignites the gas/air mixture, which in turn causes a positive pressure buildup that closes the gas and air inlets. This pressure relieves itself by forcing the products of combustion out of the combustion chamber through the tailpipe into the heat exchanger exhaust decoupler and on into the heat exchanger coil. As the combustion chamber empties, its pressure becomes negative drawing in air and gas for ignition of the next pulse of combustion. At the same instant, part of the pressure pulse is reflected back from the tailpipe at the top of combustion chamber. The flame remnants of the previous pulse of combustion ignites the new gas/air mixture in the chamber, continuing the cycle. Once combustion is started, it feeds upon itself allowing the purge blower and spark plug igniter to be turned off. Each pulse of gas/air mixture is ignited at a rate of 60 to 70 times per second producing from one-fourth to one-half of a Btu per pulse of combustion. Almost complete combustion occurs with each pulse. The force of these series of ignitions creates great turbulence which forces the products of combustion through the entire heat exchanger assembly resulting in maximum heat transfer.

FEATURES

Sequence of Operation — The room thermostat on a demand for heat will initiate purge blower operation for a prepurge cycle (34 seconds) followed by energizing of ignition and opening of the gas valve. As ignition occurs the flame sensor senses proof of ignition and de-energizes the spark igniter and purge blower. Furnace blower operation is initiated 30 to 45 seconds after combustion ignition. When thermostat is satisfied, gas valve closes and purge blower is re-energized for a post purge cycle (34 seconds). Furnace blower will remain in operation until preset temperature setting (90°F) of fan control is reached. Should loss of flame occur before thermostat is satisfied, flame sensor controls will initiate 3 to 5 attempts at re-ignition before locking out unit operation. Additionally, loss of either combustion intake air or flue exhaust will automatically shut the system down.

Heat Exchanger Assembly — Lennox developed heat exchanger assembly consists of combustion chamber, tailpipe, exhaust decoupler section and condenser coil. Combustion chamber contains the spark plug igniter, flame sensor, combustion air and gas intake manifolds. Cast iron construction provides excellent radiation of heat over entire surface area. Finned, "teardrop" shape design permits total air coverage of all surfaces with low resistance. Tailpipe connects the combustion chamber to the exhaust decoupler section. Precisely sized and shaped tailpipe is constructed of combination stainless and aluminized steel for superior resistance to high temperatures. Aluminized steel resonator on tailpipe minimizes combustion sound. Heavy gauge aluminized steel exhaust decoupler section has large surface area for maximum heat transfer. Air foil shape design results in complete air coverage with minimum resistance. Condenser coil intake header connects to bottom of exhaust decoupler section. Large face area and circuiting of coil provides high heat transfer, minimum air resistance and

proper moisture drainage. Coil is constructed of exactly spaced ripple-edged aluminum fins fitted to stainless steel tubes. Flared collars on fins grip tubes for maximum contact area. Flared tubing connections and high temperature soldering provide tight, leakproof joints. Combined flue vent and condensate drain outlet is located on the coil. Coil is factory tested for leaks. All components are mounted in a heavy gauge steel frame and installed in the furnace cabinet on resilient rubber mounts assuring quiet, vibration free operation. Heat exchanger has been laboratory life cycle tested.

Rugged Cabinet — Constructed of heavy gauge cold roll steel. Cabinet is subject to a five station metal wash process resulting in a perfect bonding surface for a paint finish of baked-on enamel. The paint solution and metal are given opposite electrical charges resulting in positive adhesion and even coverage of the paint to the metal surfaces. Heat exchanger section is completely lined with thick (1-1/2 lb. density) foil faced fiberglass insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fiberglass. Complete service access is accomplished by removing heating section and blower access panels. Removable panel is provided in vestibule panel for access to the spark plug and flame sensor. Holes are located in base for leveling unit. Leveling bolts and nuts are not furnished and must be ordered extra. Safety interlock switch automatically shuts power off to unit when blower access panel is removed. Blower assembly may be completely removed from unit for service. Electrical inlets, gas line inlets and flue vent outlets are provided in both sides of the cabinet. Combustion air inlet opening is located in cabinet cap. Return air duct connection can be made on either side or bottom of cabinet.

FEATURES (Continued)

Powerful Blowers — Units are equipped with quiet variable speed direct drive blowers. Each blower assembly is statically and dynamically balanced. Multiple-speed motor is resiliently mounted. A choice of blower speeds is available on each blower. See blower performance charts. Change in blower speed is easily accomplished by simple wiring change.

Cleanable Air Filter — Washable or vacuum cleanable frame type filter is furnished as standard. Polyurethane media is coated with oil for maximum efficiency. Filter is readily accessible in unit for quick and easy removal for servicing.

Combustion Air Intake Box — Contains the purge blower, air intake flapper valve and two pressure switches on the 40, 60 and 80 units. The 100 models have a single differential pressure switch mounted on the vestibule panel. Box is located on vestibule panel. Purge blower is equipped with a permanently lubricated motor. Blower operates only during pre-purge and post purge cycles. Air is drawn through the blower during the combustion cycle by negative pressure in the combustion chamber. Pressure switches terminate unit operation in case of air intake or flue exhaust blockage. Flapper valve section of the box is completely lined with 1 inch thick (6 lb. density) duct liner board, black neoprene coated fiberglass. Valve opening and closing is actuated by back pressure and negative pressure in combustion chamber during the heating cycle.

Automatic Gas Valve, Expansion Tank and Gas Intake Flapper Valve — 24 volt redundant dual gas control valve combines gas pressure regulation and manual main shut-off valve into a compact combination control. Dual valve design provides double assurance of 100% close off of gas on each heating cycle. Expansion tank is located downstream from the gas valve and absorbs any pressure pulsations. Gas intake flapper valve is installed in the combustion chamber intake manifold between the orifice and expansion tank. Valve is opened by entering gas pressure and closed off by back pressure from combustion pulse during the heating cycle.

Wiring Junction Box — Power supply and thermostat wiring connections are made at the wiring junction box conveniently located on the vestibule panel. Box contains 30 VA transformer, high and low voltage terminal strips and blower cooling relay. Terminal strip permits easy connections for optional power humidifier and electronic air cleaner accessories. Blower cooling relay activates blower operation for add-on air conditioning cooling cycles.

Fan and Limit Controls — Factory installed and accurately located on vestibule. Fixed limit control provides protection from abnormal operating conditions. Fan control brings blower on 30 to 45 seconds after combustion ignition and shuts blower off at factory temperature setting of 90°F.

In-Line Mufflers — Two mufflers are furnished as standard equipment with the G14Q3-100 and G14Q4/5-100 models. Mufflers field install, vertical or horizontal, one in the intake line and one in the exhaust line. The two mufflers (LB-52057CA) are optional with all other models and must be ordered extra.

Furnace Twinning Kit (Optional) — Field installed kit (LB-57803CA) is available to operate two furnaces simultaneously. Kit consists of heavy gauge steel control box and two auxiliary limit controls. Control box has electrical inlet knockouts and contains low voltage and high voltage terminal strips, blower control relay, heat relays, door interlock relay and 24 volt control transformer. All controls are factory installed and wired. Limit controls field install in each furnace. Box has holes for mounting and may be installed in any convenient location adjacent to or on one of the furnaces.

LPG Conversion Kits (Optional) — For LPG field models a conversion kit is required for field changeover from natural gas. Kit is not furnished and must be ordered extra. See Specification table.

Thermostat (Not Furnished) — Heating thermostat is optional equipment and must be ordered extra. See Accessories Section, Page 13 and Lennox Price Book. For all-season applications, heating-cooling thermostat is available with the condensing unit.

External Filter Mounting Kit (Optional) — Kit is available for installing air filter external to unit cabinet on side return air applications. Heavy gauge cold rolled steel filter rack assembly field installs on either side of unit cabinet with existing cabinet screws. Rack has flanges for ease of duct connection. Filter is not furnished with kit and must be ordered extra. See specifications table.

Concentric Vent/Intake Air Roof/Wall Termination Kit (Optional) — Facilitates installation of combustion air intake pipe and flue exhaust pipe. Kit (LB-49107CE) contains concentric termination assembly, mounting clamp, roof flashing, reducer bushing and 45° elbow. Kit requires single hole penetration of roof or wall for installation. Kit must be ordered extra and field installs. A.G.A. certified.

Vent/Intake Air Roof Termination Kit (Optional) — Facilitates installation of combustion air intake pipe and flue exhaust pipe. Kit contains 2 neoprene rubber roof flashings and 18 inch insulation sleeve for sealing and isolating intake and exhaust piping penetration in roof. Kit LB-49107CC must be ordered extra.

Vent/Intake Air Wall Termination Kit (Optional) — Facilitates installation of combustion air intake pipe and flue exhaust pipe. Kit must be ordered extra. Select one of the following.

- 1 — Kit (LB-49107CB) contains 2 stainless steel outside seal caps, 2 galvanized steel inside seal caps, 4 seal rings for the caps and 18 inch insulation sleeve for sealing and isolating intake and exhaust piping penetration of wall. Maintain a maximum of 6 inches between the inlet and outlet openings in the installation of the pipes.
- 2 — Kit (LB-49107CD) consists of close-couple side-by-side PVC piping with galvanized steel wall cover plate for sealing and isolating piping penetration of the wall. Piping spacing and length is sized for proper wall installations. A.G.A. certified.

Approvals — The G14 series furnaces are design certified by A.G.A. Laboratories and ratings are certified by GAMA. Units meet the California Nitrogen Oxides (NO_x) standards and California Seasonal Efficiency requirements. In addition, units have been rated and tested in the Lennox Research Laboratory according to Department of Energy (DOE) test procedures and Federal Trade Commission (FTC) labeling regulations. Blower data is from unit tests conducted in the Lennox Laboratory air test chamber.

Equipment Warranty — The G14 'PULSE' heat exchangers have a limited lifetime warranty. Solid-state ignition modules have a limited warranty for a full three years. All other components have a limited warranty for one year. Refer to the Lennox Equipment Warranty certificate included with the equipment for details.

Installation Recommendations — Lennox recommends the following installation procedures to minimize any vibration transmitted from furnace during operation. Place (4) neoprene rubber isolation mounting pads (furnished) and/or base insulation pad, 1 inch thick, 1-1/2 lb. density fiberglass (furnished), under the unit. Install flexible duct connectors in the supply air plenum and return air plenum or duct connection. Insulate (1 inch thick, 1-1/2 to 3 lb. density, matt faced fiberglass) supply and return air plenums through take-off or duct elbow. Use flexible connector (furnished) in gas supply piping where allowed by local codes. Insulate (refrigerant piping insulation or equivalent) all straps and hangers used in suspending ducts, electrical conduit, gas piping, combustion air intake piping and flue exhaust piping. In addition, use plastic pipe or tubing for drain line from the heat coil condensate drain leg (furnished) to the drain, do not use copper tubing.

SPECIFICATIONS

Model No.	G14Q3-40	G14Q3-60	G14Q4-60
Input Btuh	40,000	60,000	60,000
Output Btuh	38,000	55,000	55,000
†A.F.U.E.	96.2%	92.4%	92.5%
High static A.G.A. (in. wg.)	.50	.50	.50
California Seasonal Efficiency	90.0%	87.2%	85.6%
Temperature rise range (°F)	35 – 65	40 – 70	35 – 65
Vent/Intake air pipe size connection (in.)	2	2	2
Gas pipe size I.P.S. (in.) Natural & *LPG	1/2	1/2	1/2
Condensate drain connection (SDR11)	1/2	1/2	1/2
Blower wheel nominal diameter x width (in.)	10 x 8	10 x 8	11 x 9
Blower motor hp	1/3	1/3	1/2
Number and size of filters (in.)	(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 16 x 25 x 1
Tons of cooling (Add-on)	1-1/2 – 3	1-1/2 – 3	2-1/2 – 4
Shipping weight (lbs.)	250	250	255
No. of packages in shipment	1	1	1
Electrical characteristics	120 volts – 60 hertz – 1 phase (less than 12 amps)		
*LPG Kit (Optional)	LB-57973CA	LB-57973CB	LB-57973CB
External Filter Mounting Kit (Optional)	LB-81871CA	LB-81871CA	LB-81871CA
††filter size (in.)	(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 16 x 25 x 1

†Annual Fuel Utilization Efficiency based on DOE test procedures, and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.
 *For LPG units a field changeover kit is required and must be ordered extra.

††Filter is not furnished and must be ordered extra.

SPECIFICATIONS

Model No.	G14Q3-80	G14Q4-80	G14Q5-80	G14Q3-100	G14Q4/5-100
Input Btuh	80,000	80,000	80,000	100,000	100,000
Output Btuh	73,000	73,000	74,000	93,000	95,000
†A.F.U.E.	92.7%	92.7%	91.7%	91.7%	93.5%
High static A.G.A. (in. wg.)	.50	.50	.50	.50	.50
California Seasonal Efficiency	87.3%	86.4%	86.6%	87.9%	88.0%
Temperature rise range (°F)	45 – 75	40 – 70	35 – 65	55 – 85	40 – 70
Vent/Intake air pipe size connection (in.)	2	2	2	2	2
Gas pipe size I.P.S. (in.) Natural & *LPG	1/2	1/2	1/2	1/2	1/2
Condensate drain connection (SDR11)	1/2	1/2	1/2	1/2	1/2
Blower wheel nominal diameter x width (in.)	10 x 8	11 x 9	12 x 12	10 x 8	12 x 12
Blower motor hp	1/3	1/2	3/4	1/2	3/4
Number and size of filters (in.)	(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 20 x 25 x 1	(1) 20 x 25 x 1	(1) 20 x 25 x 1
Tons of cooling (Add-on)	2 – 3	2-1/2 – 4	4 or 5	2 – 3	3-1/2 – 5
Shipping weight (lbs.)	250	255	297	297	297
No. of packages in shipment	1	1	1	**2	**2
Electrical characteristics	120 volts – 60 hertz – 1 phase (less than 12 amps)				
*LPG Kit (Optional)	LB-57973CC	LB-57973CC	LB-57973CC	LB-51702CC	LB-51702CC
External Filter Mounting Kit (Optional)	LB-81871CA	LB-81871CA	LB-81871CB	LB-81871CB	LB-81871CB
††filter size (in.)	(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 20 x 25 x 1	(1) 20 x 25 x 1	(1) 20 x 25 x 1

†Annual Fuel Utilization Efficiency based on DOE test procedures, and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized

*For LPG units a field changeover kit is required and must be ordered extra.

**Packages consist of assembled unit and in-line mufflers.

††Filter is not furnished and must be ordered extra.

HIGH ALTITUDE DERATE

If the heating value of the gas does not exceed values listed in the table, derating of the unit is not required. Should the heating value of the gas exceed the table values, or if the elevation is greater than 6,000 feet above sea level it will be necessary to derate the unit. Lennox requires that derate conditions be 4% per thousand feet above sea level. Thus at an altitude of 4000 feet, if the heating value of the gas exceeds 1000 Btu/ft³, unit will require a 16% derate.

Elevation Above Seal Level (feet)	Maximum Heating Value (Btuh/ft ³)
5001 – 6000	900
4001 – 5000	950
3001 – 4000	1000
2001 – 3000	1050
Sea Level – 2000	1100

BLOWER DATA

**G14Q3-40, G14Q3-60 AND G14Q3-80
BLOWER PERFORMANCE**

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1585	1392	920
.05	1558	1364	917
.10	1533	1354	915
.15	1505	1335	912
.20	1477	1315	905
.25	1447	1294	893
.30	1418	1272	887
.40	1355	1223	858
.50	1282	1164	803

NOTE – All cfm is measured external to the unit with the air filter in place.

**G14Q4-60 AND G14Q4-80
BLOWER PERFORMANCE**

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1793	1295	1050
.05	1770	1290	1050
.10	1747	1285	1050
.15	1724	1280	1050
.20	1700	1275	1050
.25	1675	1267	1050
.30	1648	1258	1050
.40	1585	1233	1036
.50	1517	1193	1012

NOTE – All cfm is measured external to the unit with the air filter in place.

G14Q5-80 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	2460	2350	2155	1900	1695
.05	2430	2310	2130	1875	1675
.10	2395	2275	2100	1855	1655
.15	2355	2240	2065	1825	1625
.20	2315	2205	2035	1800	1600
.25	2275	2175	1995	1780	1570
.30	2235	2130	1960	1740	1540
.40	2155	2055	1880	1675	1480
.50	2070	1970	1790	1605	1410
.60	1980	1890	1710	1540	1345

NOTE – All cfm is measured external to the unit with the air filter in place.

G14Q3-100 BLOWER PERFORMANCE

External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds		
	High	Medium	Low
0	1850	1660	1500
.05	1805	1635	1470
.10	1760	1610	1440
.15	1720	1575	1420
.20	1680	1540	1400
.25	1635	1505	1375
.30	1590	1470	1350
.40	1500	1400	1290
.50	1400	1320	1220
.60	1290	1230	1140

NOTE – All cfm is measured external to the unit with the air filter in place.

G14Q4/5-100 BLOWER PERFORMANCE

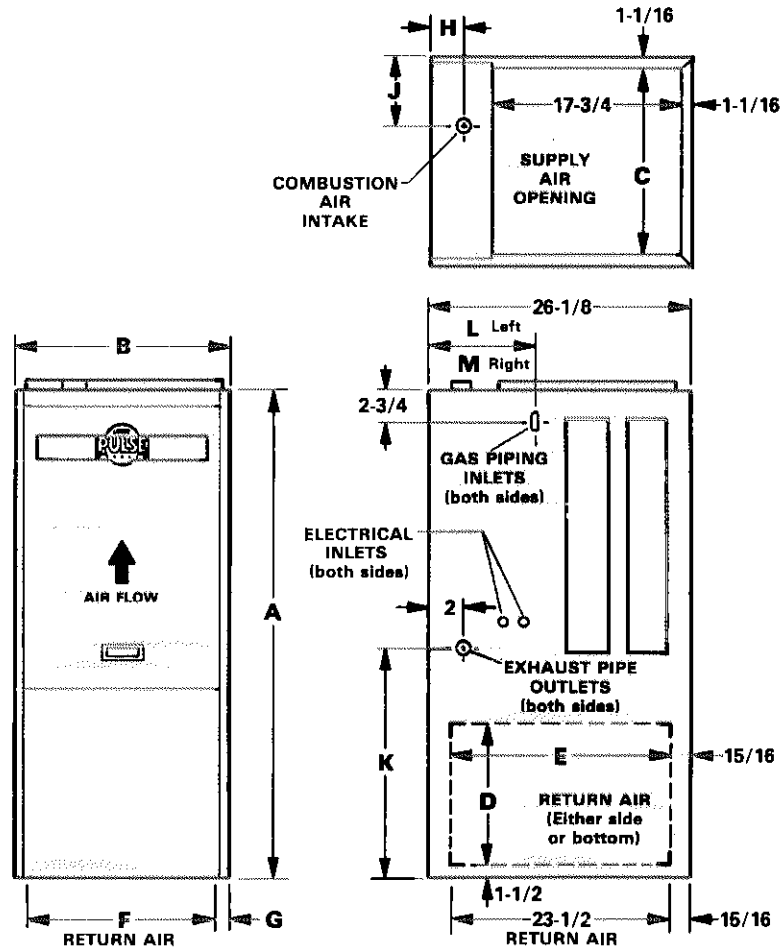
External Static Pressure (in. wg.)	Air Volume (cfm) @ Various Speeds				
	High	Med-High	Medium	Med-Low	Low
0	2450	2340	2140	1910	1690
.05	2420	2310	2110	1880	1670
.10	2390	2270	2080	1860	1640
.15	2350	2240	2050	1830	1620
.20	2320	2210	2020	1800	1590
.25	2280	2170	1990	1770	1570
.30	2250	2140	1960	1740	1540
.40	2180	2060	1890	1680	1480
.50	2100	1980	1810	1610	1420
.60	2005	1890	1740	1530	1350

NOTE – All cfm is measured external to the unit with the air filter in place.

A.G.A. INSTALLATION CLEARANCES (inches)

Front, Top, Sides, Rear	1 inch
Floor	Combustible
Exhaust Pipe	0 inches
Exhaust Pipe Side	6 inches (Service Only)

DIMENSIONS (inches)



Model No.	G14Q3-40 G14Q3-60 G14Q3-80	G14Q4-60 G14Q4-80	G14Q3-100	G14Q5-80 G14Q4/5-100
A	49	49	53	53
B	21-1/4	21-1/4	26-1/4	26-1/4
C	19-1/8	19-1/8	24-1/8	24-1/8
D	14-1/2	14-1/2	18-1/2	18-1/2
E	18-1/2	23-1/2	18-1/2	23-1/2
F	14-1/2	14-1/2	18-1/2	18-1/2
G	3-3/8	3-3/8	3-7/8	3-7/8
H	4-1/8	4-1/8	1-15/16	1-15/16
J	8-1/2	8-1/2	11	11
K	20-1/4	20-1/4	24-1/4	24-1/4
L	7-1/4	7-1/4	4-1/2	4-1/2
M	5-1/4	5-1/4	4-1/2	4-1/2